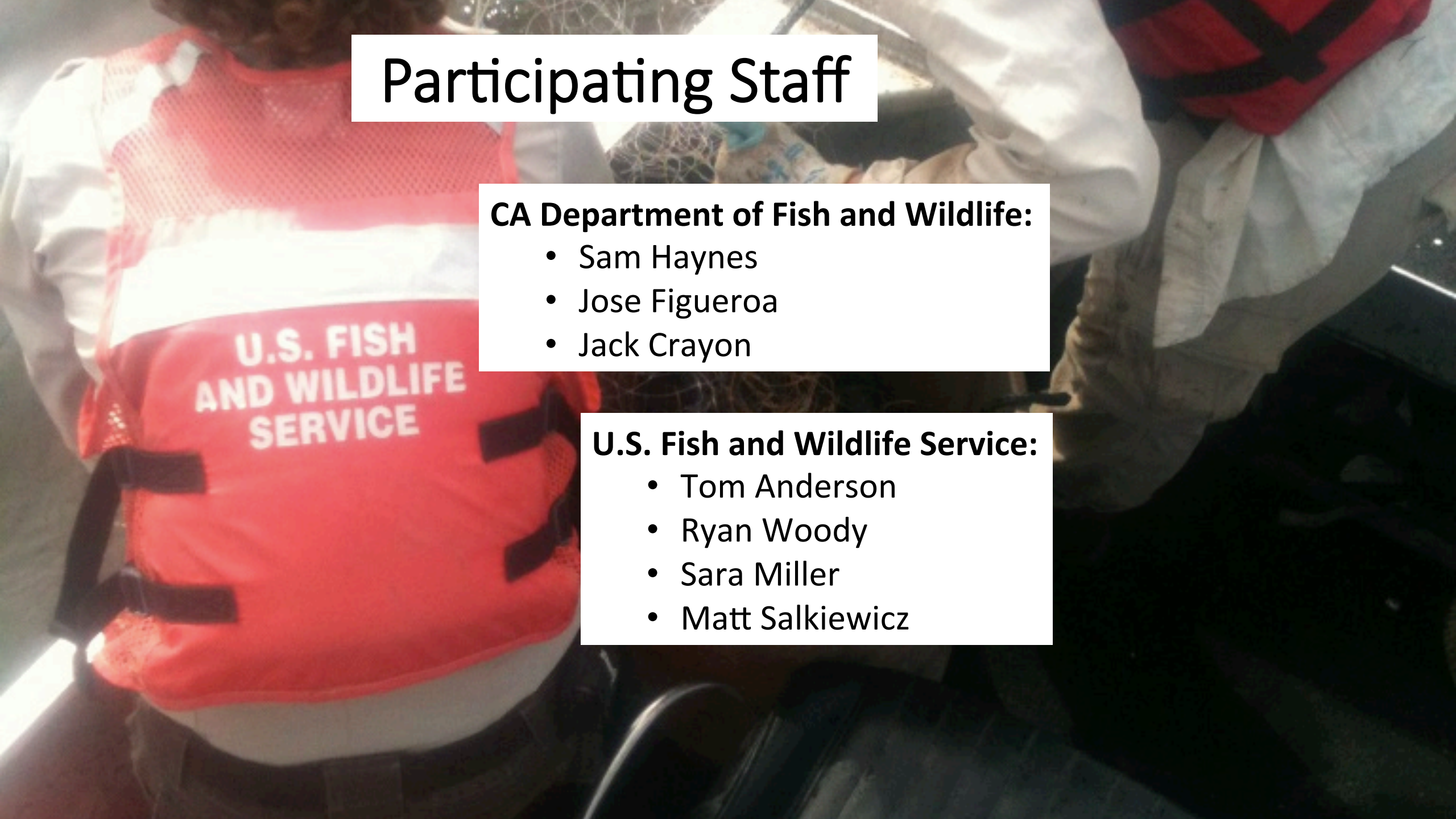
Salton Sea Long-term Monitoring

Sampling Report: Summer 2017

California Department of Fish and Wildlife
and
U.S. Fish and Wildlife Service

Participating Staff



CA Department of Fish and Wildlife:

- Sam Haynes
- Jose Figueroa
- Jack Crayon

U.S. Fish and Wildlife Service:

- Tom Anderson
- Ryan Woody
- Sara Miller
- Matt Salkiewicz

Rationale

- Fisheries were last surveyed in Fall 2008
- These indicators were previously closely associated with fish numbers
  - Good numbers of piscivorous birds
  - Young tilapia were visible
  - Great angler success
  - Large fish kills with arrange of fish sizes
- Indicators in early 2016 started to diminish

Methods

- Limited by useable launch sites (Varner Harbor, Obsidian Butte)
- Used a subset of previous sites: 3 by rivers and 3 nearshore sites
- Used the same gear and amount of effort at each site
- Multi-mesh monofilament nets 6 feet deep
- Five X 30 foot sections with .5, 1, 2, 3, and 4 “ mesh nets
- Moved sampling sites out to deeper water
- Summer sampling period was always the most productive: sampled from July 13 to August 8

- Two Launch Sites
- Three sites by Rivers
- Three nearshore sites
- North/South split

Methods

- Limited by useable launch sites (Varner Harbor, Obsidian Butte)
- Used a subset of previous sites: 3 by rivers and 3 nearshore sites
- Used the same gear and amount of effort at each site
- Two nets per site
- Multi-mesh monofilament nets 6 feet deep
- Five sections, 30 foot long with 0.5, 1, 2, 3, and 4 “ mesh nets
- Moved sampling sites out to deeper water
- Summer sampling period was always the most productive: sampled from July 13 to August 8

Date	Site	Net-hours	Tilapia	Croaker	Corvina	Sargo	Other	Total Fish	CPUE
7/9/2008	Whitewater River	24	565	0	0	0	0	565	23.79
7/10/2008	North Shore	24	735	0	0	0	2 molly	737	30.63
7/16/2008	Bat Caves	24	876	0	0	0	0	876	36.12
7/8/2008	Desert Shores	24	683	0	0	0	0	683	28.76
7/22/2008	The Dome	24	648	0	0	0	0	648	26.72
7/17/2008	The Cliffs	24	1060	0	0	0	0	1060	43.71
8/1/2008	New River	24	371	0	0	0	0	371	15.46
8/1/2008	Test Base	24	781	0	0	0	0	781	32.54
7/23/2008	So. Salton City	24	723	0	0	0	0	723	30.13
7/18/2008	Alamo River	24	570	0	0	0	0	570	23.51
7/18/2008	No.Wister	24	630	0	0	0	0	630	25.98
Totals		**265**	**7642**	**0**	**0**	**0**	**2**	**7644**	**28.87**

Results

Date	Site	Net-hours	Tilapia	Croaker	Corvina	Sargo	Other	Total Fish	CPUE
7/14/2017	Alamo River	48.0	67	0	0	0	0	67	1.40
7/20/2017	New River	48.0	48	0	0	0	0	48	1.00
7/26/2017	Test Base*	48.0	1	0	0	0	0	1	0.02
7/27/2017	North Shore	55.0	39	0	0	0	0	39	0.71
8/3/2017	Bat Caves**	47.5	4	0	0	0	0	4	0.08
8/8/2017	Whitewater	48.0	168	0	0	0	0	168	3.50
	The Dome								
	The Cliffs								
	Desert Shores								
	So. Salton City								
	No.Wister								
Totals		**294.5**	**327**	**0**	**0**	**0**	**2**	**327**	**1.11**
* Nets were coated on top 1/3 by colonizing barnacles, and coated with algae. Mesh was visible to fish.									
** Nets were heavily coated with algae, and mesh was highly visible									

	Size Class 1			Size Class 2			Size Class 3		
	Range (mm)	n	%	Range (mm)	n	%	Range (mm)	n	%
Summer '17	64-76	28	9	80-200	128	39	279-394	171	52

Results

River sites were low, but not terrible

Alamo River		New River		Whitewater River	
Quarter	CPUE	Quarter	CPUE	Quarter	CPUE
Su 04	0.28	Su 03	0.18	Su 05	0.00
Su 03	0.34	Su 04	0.30	Su 03	0.04
Su 17	**1.40**	Su 07	0.55	**Su 17**	**3.50**
Su 05	1.71	**Su 17**	**1.00**	Su 04	6.85
Su 06	1.94	Su 06	8.40	Su 06	12.00
Su 07	3.26	Su 05	11.05	Su 07	23.25
Su 08	23.51	Su 08	15.46	Su 08	23.79

Nearshore sites were the lowest ever sampled

Bat Caves		North Shore		Test Base	
Quarter	CPUE	Quarter	CPUE	Quarter	CPUE
Su 17	**0.08**	**Su 17**	**0.71**	**Su 17**	**0.02**
Su 03	2.43	Su 03	2.12	Su 03	1.73
Su 04	4.02	Su 04	8.83	Su 06	5.29
Su 06	10.09	Su 05	8.99	Su 07	12.46
Su 05	18.36	Su 06	22.61	Su 04	23.07
Su 07	23.88	Su 07	24.38	Su 05	25.02
Su 08	36.12	Su 08	30.63	Su 08	32.54

- Two Launch Sites
- Three sites by Rivers
- Three nearshore sites
- North/South split

(1.4 vs 0.8 CPUE)

What about the birds?

- Dispersing young Brown Pelicans showed up as usual in early summer: ~2,000 birds
- Eared Grebe numbers at Mono Lake crashed the last two years
- A very wet winter allowed many American White Pelicans to stay up north
- Double-crested Cormorants show a lot of variance in nesting site and foraging site fidelity
- Piscivorous birds have been documented by multiple observers feeding on tilapia, especially at the north end of the lake
- We can't equate declines in the forage base at the Salton Sea directly with a reduction in population numbers
- The status of several important macroinvertebrates is a crucial unknown factor

What Do We Know?

- Fish population has taken a huge hit
- Distribution of remaining fish is patchy
- Tilapia reproduction took place this year
- Historic tilapia breeding sites have been abandoned
- There is structure to the population
- However, fish numbers are the lowest we have ever seen in the summer
- Birds numbers are low, but not all gone
- Piscivorous birds still have a reduced forage base
- Barnacles are still hanging on

What Can We Infer?

- We CAN'T infer that the fishery is done for; we have seen remarkable recovery from these population levels in the recent past
- Salinity is a primary stressor (among several) yet fish appear robust and vital
- Hydrogen sulfide upwellings are still the primary driver of fish mortality
- Surveys next summer will be revealing
- The status of the several macroinvertebrate populations will become more valuable information